

TOPOLOGICAL INSULATORS

course for MSc and PhD students, 2017 Fall Semester, ELTE/BME

lecturers: János Asbóth, Wigner Research Centre for Physics

László Oroszlány, Eötvös University (ELTE)

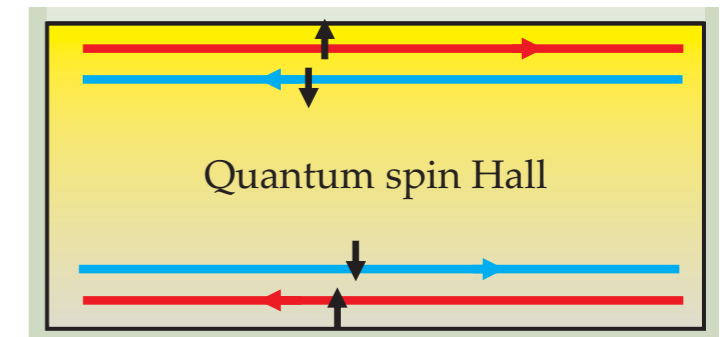
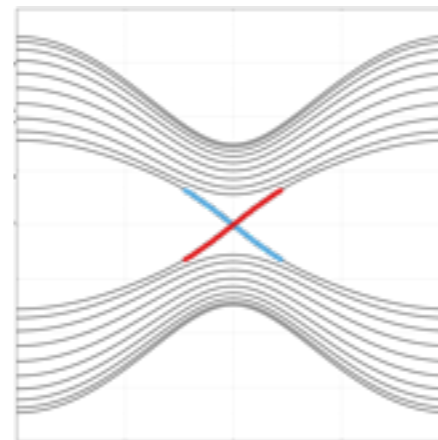
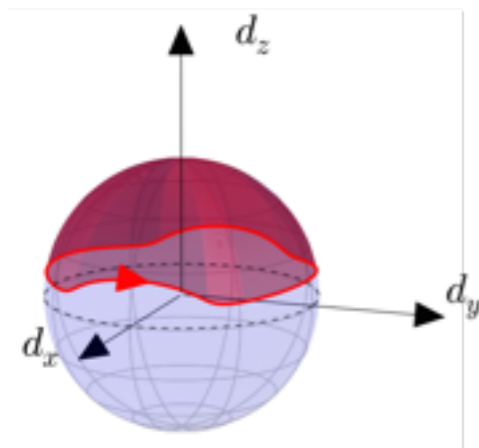
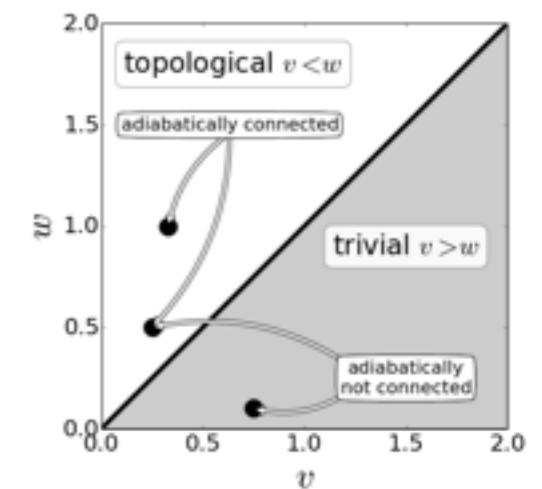
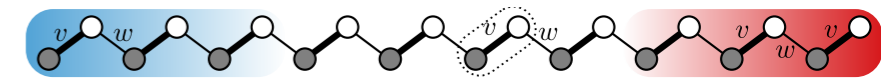
András Pályi, Budapest University of Technology and Economics (BME)

Topics:

- electrons in solids: the tight-binding model
- simple 1D and 2D models of topological insulators
- Berry phase, Chern number
- adiabatic charge pumping
- edge states and their topological protection
- topological invariants, bulk-boundary correspondence
- disorder and conductance quantisation in topological insulators
- quantum anomalous and spin Hall effects

Prerequisites:

quantum mechanics



Lecture notes:

J. Asbóth, L. Oroszlány, A. Pályi:

„A Short Course on Topological Insulators”

Springer 2016, <https://arxiv.org/abs/1509.02295>

Contact us via palyi@mail.bme.hu if you're interested.